

**I. Double Patent Rejection**

It is respectfully submitted that the amendments to the claims overcome the statutory double patenting rejections set forth in the office action. In the event the non-statutory double patenting rejections are maintained, a terminal disclaimer will be filed.

**II. DRAWINGS**

Drawings correcting the formalities listed on the Notice of Draftsperson's Patent Drawing Review are enclosed.

**III. Claim Rejections Under § 112**

Claim 80 has been amended to recite that the substrate is rinsed with an aqueous medium comprising an anti-corrosive agent including an organic acid selected from the group consisting of mono- and polycarboxylic acids in an amount effective to minimize metal corrosion. In view of this amendment it is believed that Claim 80 satisfies the requirements of § 112.

Claims 80, 88 and 89 have been amended to positively recite processing steps as required in the Office Action. It is believed that these amendments to the claims overcome the rejections under § 112.

**IV. Claim Rejections Based on Prior Art**

Claims 80-87, 90-94, 97-102 and 105-107 stand rejected as being anticipated by Eisenmann.

Claims 80-107 stand rejected as being anticipated by Hineman.

Claims 108-111 stand rejected as being made obvious by Eisenmann in view of EP 0784336.

Claim 80 as amended includes the steps of providing at least one metallized semiconductor substrate, the substrate having etch residue removal chemistry thereon, and rinsing the substrate with an aqueous medium comprising the anti-corrosive agent. Similarly, Claims 90 and 98 recite the steps of providing at least one metallized semiconductor substrate, the substrate having etch residue removal chemistry thereon, and contacting the substrate with an aqueous medium including an anti-corrosive agent.

Claim 88 as amended includes the steps of providing at least one semiconductor substrate having copper thereon, the substrate further having etch residue removal chemistry thereon, and rinsing the substrate with an aqueous medium comprising an amount of acetic acid effective to minimize metal corrosion of the copper.

Claim 89 as amended includes the steps of providing at least one semiconductor substrate having titanium nitride thereon, the substrate further having etch residue removal chemistry thereon, and rinsing the substrate with an aqueous medium comprising an amount of acetic acid effective to minimize metal corrosion of the titanium nitride.

As understood by Applicant, the cited references fail to disclose nor fairly suggest the steps of providing a metallized substrate with etch residue removal chemistry thereon and contacting the substrate with a rinse medium that includes an anti-corrosive chemical agent. Accordingly, the amended claims are believed to distinguish over the cited references.

#### V. New Claims

Claims 112 – 121 are new dependent claims and are believed allowable for the reasons set forth above.

Claims 112-113 provide examples of etch residue removal chemistries.

Claim 114 recites that the aqueous solution consists essentially of a mono-carboxylic acid and water.

Claim 115 recites that the aqueous solution consists essentially of acetic acid and water.

Claims 116-118 recite that the contacting or rinsing step includes positioning the substrate with etch residue removal chemistry thereon into a rinse vessel and introducing the aqueous medium into the rinse vessel.

Claims 119 – 121 recite that the contacting or rinsing step minimizes corrosion of metal on the metallized substrate and rinses the etch residue removal chemistry from the substrate.

**VI. Conclusion**

In view of the foregoing, early reconsideration and allowance of the claims is respectfully requested.

Respectfully submitted,

STALLMAN & POLLOCK LLP

Dated: December 13, 2002

By: Kathleen A Frost  
Kathleen A. Frost  
Reg. No. 37,326

Attorneys for Applicant(s)

## Marked-Up Version of Amended Claims

80. (AMENDED) A method for rinsing metallized semiconductor substrates following treatment of the substrates with an etch residue removal chemistry, the method comprising the steps of:

providing at least one metallized semiconductor substrate, the substrate having etch residue removal chemistry thereon; and

rinsing the substrate with an aqueous medium comprising [including in said aqueous medium an amount effective to minimize metal corrosion of] an anti-corrosive agent including an organic acid selected from the group consisting of mono- and polycarboxylic acids [compound] in an amount effective to minimize metal corrosion.

83. (AMENDED) A method according to claim 80 [81] in which the organic carboxylic acid includes a mono-carboxylic acid.

88. (AMENDED) A method for rinsing metallized semiconductor substrates containing copper following treatment of the substrates with an etch residue removal chemistry, the method comprising the steps of:

providing at least one semiconductor substrate having copper thereon, the substrate further having etch residue removal chemistry thereon; and

rinsing the substrate with an aqueous medium comprising [including in said aqueous medium] an amount of acetic acid effective to minimize metal corrosion of the copper.

89. (AMENDED) A method for rinsing metallized semiconductor substrates containing titanium nitride following treatment of the substrates with an etch residue removal chemistry, the method comprising the steps of:

providing at least one semiconductor substrate having titanium nitride thereon, the substrate further having etch residue removal chemistry thereon; and

rinsing the substrate with an aqueous medium comprising [including in said aqueous medium] an amount of acetic acid effective to minimize metal corrosion of the titanium nitride.

90. (AMENDED) A method for rinsing metallized semiconductor substrates following treatment of the substrates with an etch residue removal chemistry, comprising:  
providing at least one metallized semiconductor substrate, the substrate having etch residue removal chemistry thereon;

contacting the substrate with an aqueous medium containing one or more anti-corrosive chemical agents wherein the concentration of the anti-corrosive chemical agent or agents is maintained at a controlled level or within a predetermined range, and the substrate is maintained in contact with the chemical agent or agents for a predetermined time.

98. (AMENDED) A method for rinsing metallized semiconductor substrates following treatment of the substrates with an etch residue removal chemistry, comprising:  
providing at least one metallized semiconductor substrate, the substrate having etch residue removal chemistry thereon;

contacting the substrate with an aqueous rinse medium containing anti-corrosive chemical agent including an organic compound, wherein the amount of the anti-corrosive chemical agent in the aqueous medium is maintained in a controlled manner, at a predetermined concentration or within a predetermined range,  
conducting the contacting [rinse of] step [a] for a predetermined time, and

then rinsing the substrate with deionized water[, or other aqueous media alone] substantially free of the anti-corrosive chemical agent.